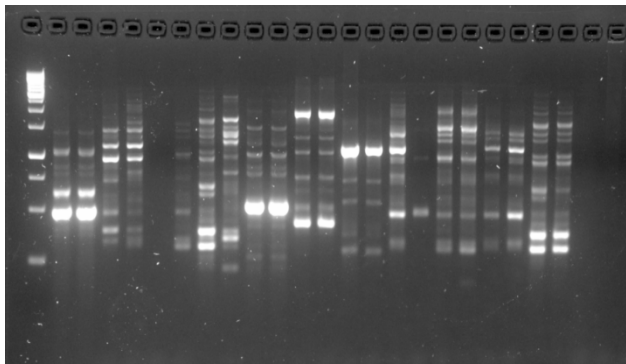


**Brief Report of Ms Nagvanti Atoliya, SRF, ICAR-Indian Institute of Soil Science, Bhopal
of work done at University of Oxford, UK**

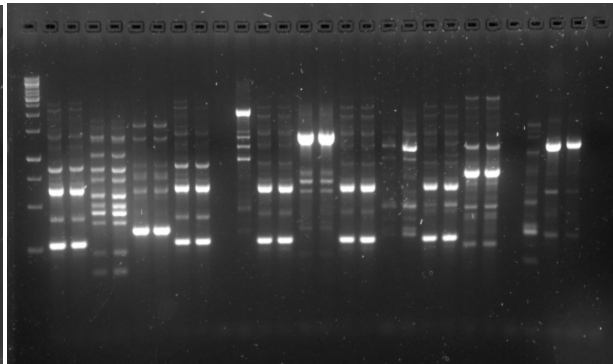
In the Indo-UK Nitrogen Fixation Centre (IUNFC) at ICAR-IISS, Bhopal the work is focused on isolation and characterization of the best performing *Rhizobium* strains for Pigeonpea (*Cajanus cajan*) in Vertisols of Central India. The most effective and competitive strains in nodulation and nitrogen fixation are developed as inoculants for use in farmers' fields to boost grain yields. I visited the laboratory of Professor Philip Poole at the Department of Plant Sciences, Oxford in April 2018 for 3 months to carry out a part of the work.

Objectives of the project involved:

1. Generation and evaluation of BOX PCR profile of *Rhizobium* strains to short-list different strains of pigeon pea rhizobia based on the BOX patterns.



BOX profile 1-11



BOX profile 11-24

Table1: Strains used for nodulation test and ARA

Strain	New strain code	Origin	BOX-PCR profile
BRP2	IUS2002	IISS, Bhopal	I
BRP3	IUS2003	Sukhisevaniya, Vidisha road	J
BRP4	IUS2004	Khedi, Berasia, Bhopal	B
BRP5	IUS2005	IISS, Bhopal	K
BRP6	IUS2006	Phandakalan, Sehore road, Bhopal	A
BRP7	IUS2007	IISS, Bhopal	L
BRP8	IUS2008	IISS, Bhopal	C
BRP9	IUS2009	Balampur, Vidisha	M
BRP10	IUS2010	Khedi, Bersia, Bhopal	N
BRP12	IUS2012	Nipaniyakalan, Sehore road, Bhopal	P
BRP14	IUS2014	Phandakalan, Sehore road, Bhopal	Q
BRP18	IUS2018	Khedi, Berasiaroad, Bhopal	S
BRP19	IUS2019	Diwanganj, Vidisha	T
BRP20	IUS2020	IISS, Bhopal	D
BRP22	IUS2022	Nipaniyakalan, Sehore road, Bhopal	U
BRP23	IUS2023	IISS, Bhopal	F

BRP24	IUS2024	Dodi, Ashta	V
BRP26	IUS2026	Bhadakhedi, Ashta	W
BRP28	IUS2028	IISS, Bhopal	X
BRP30	IUS2030	IISS, Bhopal	Y
BRP33	IUS2033	Nipaniyakalan, Sehore road, Bhopal	A1
BRP34	IUS2034	Khokhari, Ashta	E
BRP37	IUS2037	Vidisha bypass, Bhopal	B1
BRP39	IUS2039	Khajoori road, Sehore	H
BRP40	IUS2040	Nepaniyajatt, Berasia, Bhopal	C1
BRP42	IUS2042	Kilerama, Ashta	E1
BRP46	IUS2046	Bhadakhedi, Ashta	H1
BRP51	IUS2051	Rafiqganj, Sehore	K1
BRP52	IUS2052	Phandakalan, Sehore road, Bhopal	G
BRP55	IUS2055	Salamatpur, Vidisha	M1
BRP56	IUS2056	Parwaliya, Bhopal	N1

2. Nodulation test:

- Nodulation test was performed in sterile 1:1 sand and vermiculite as well as in boiling tubes. For each strain 1 biological replicate was set up with 1 negative control. Pea and Rlv 3841 used as positive control (conjugated with psNifH::sfGFP-pOGG026).
- After 24 days of sowing, 3 nodules from each plant were taken and then nodules were surface sterilized for re-isolation of rhizobia to prove Koch postulates.
- One colony from each nodule was taken for DNA isolation to generate BOX pattern and comparison between re-isolated strains and original rhizobia.
- All the slow growers were nodulated pigeon pea but not the fast growers.

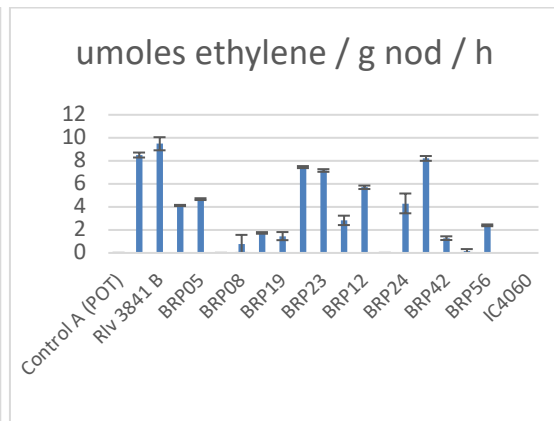
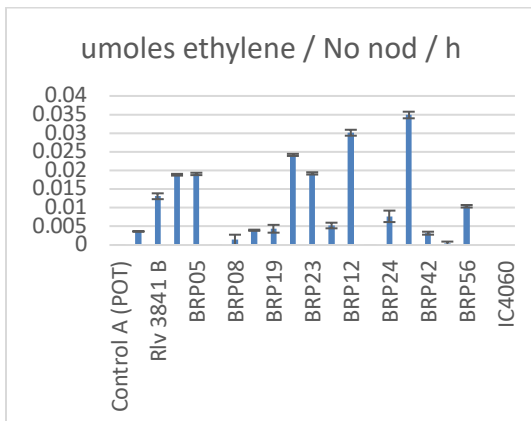
3. Acetylene Reduction Assay:



Nodulation test



ARA



It was a very good experience to work with the enthusiastic researchers of Poole lab who are carrying out work on molecular aspects of rhizobia of different leguminous plants to increase nitrogen fixation. I carry back precious memories and would like to thank everybody and in particular Dr. Alison East and Dr. Beatriz for their constant help in all ways for my research and other aspects of my stay.